8, lines 169-174; Disclosure page 18, lines 283, 284, 287-289, gel no. 4.1) This aspect of the invention shows that an acrylic acid polymer, if properly made, can be cross linked. (Note the discussion of the problem in the disclosure at page 3, lines 53-66.) The water insoluble gel of this invention is useful as a water shut-off and profile modification material. (Disclosure, page 5, lines 102-106)

Claims 1, 2 and 6 are drawn to a method of making a water soluble polymer of an acrylic acid compound. Claims 3, 4, 5, 7 and 8 are drawn to method of making a water insoluble gel by reacting the water soluble polymer of claim 2 with a cross linking agent.

Claims 12 and 13 are drawn to a method of making a water soluble polymer of an acrylic acid compound.

Claims 14 and 15 are drawn to a method of adjusting the permeability of a subsurface formation by introducing into the formation a gel which is not water soluble, wherein the gel is formed by first making a water soluble polymer and then combining the water soluble polymer with a cross linking agent.

Claim 16 is drawn to a method of adjusting the permeability of a subsurface formation by introducing into the formation a gel which is not water soluble, wherein the gel is made by first making a water soluble polymer and then cross linking the water soluble polymer.

THE ART REJECTION

The rejection of claims 1-8 and 12-16 under 35 USC 103(a) as being obvious in view of US Patent 6,297,336 to Shioji et al is traversed for the following reasons.

To assert that a person skilled in the art can employ the disclosure of Shioji et al to produce the claims of Applicant is squarely in the realm of speculation and not in the realm of suggestion.

Shioji et al are solely concerned with a polymer of an acrylic acid compound useful as a detergent builder having good gelation resistance and good chelating ability. (Col. 2, lines 19-24) According to Shioji et al , "gelation resistance is an index showing the unlikeliness of the occurrence of a phenomenon in which polycharged metal ions, such as calcium ion, present in the system, precipitates and gels due to contact with the poly(meth)acrylic acid (or salt) polymer..." (Col. 1, lines 61-65) According to Shioji et al, "chelating ability is an index showing the ability to chelate the polycharged metal ions, such as calcium ion, present in the system...." (Col. 2, lines 1-3) Shioji et al imply that poor gelation resistance is associated with high molecular weight of the polymer (Col. 1, lines 65-67), but that good chelating ability is associated with high molecular weight of the polymer. (Col. 2, lines 3-4) Shioji et al, accordingly, announces that the key to obtaining a poly(meth)acrylic acid (or salt) polymer having good gelation resistance and good chelating ability is to make a polymer having a narrow molecular weight distribution. (Col. 2, lines 5-24)

Shioji et al, accordingly, disclose and claim in independent claim 6 a very specific process for making a poly(meth)acrylic acid (or salt) polymer having a narrow molecular weight distribution. Claims 7, 8, and 9 are product-by-process claims which depend from claim 6. Independent claim 1 and dependent claim 2 are identical in content to product-by-process claim 7 except that claims 1 and 2 are cast in traditional composition claim format.

The composition of Shioji et al is made by a very specific process which is outlined in Col. 2, lines 38-61. The process is further discussed in Col. 3, lines 26-45. According to the process: (1) The weight ratio of all reactants to water is in the range of from 46 to 66 weight parts reactant and 54 to 34 weight parts water; (2) At least 10 weight percent of the water and up to 50 weight percent of chain transfer agent (one of the reactants) are charged to the reactor; and (3) When the reaction temperature attains a value in the range of from 50 to 120^0

C, then at least 70 weight percent of the monomer (one of the reactants), 50 weight percent or more of chain transfer agent and 80 weight percent or more of polymerization initiator (one of the reactants) are gradually added to the reactor.

That specific process produces the claimed detergent builder result.

According to Shioji et al the monomer component is preferably 100 percent of a (meth)acrylic acid (or salt). The component can be entirely (meth)acrylic acid, entirely monovalent metal salt of (meth) acrylic acid, entirely divalent metal salt of (meth) acrylic acid or any mixture thereof (Col. 3, line 48 to Col. 4, line 4). Acrylic acid is preferred.

Shioji et al do not suggest that the polymer product should have a minimum amount of divalent metal salt of acrylic (such as 0.65 units as claimed herein) or that any special result will be obtained if a such mixture of such components is employed .

Shioji et al do not disclose a single example in which a divalent metal salt of acrylic acid is employed. In fact, it appears that the total disclosure of divalent metal salts of acrylic acid occurs in Col. 3, lines 61-67.

Shioji et al do not expressly state that the polymer product of their specific process is in fact water soluble; however, in view of the stated goal of obtaining a polymer having gelation resistance and cross linking ability, it can be inferred that their polymer product is water soluble.

Shioji et al do not disclose or suggest that the polymer product is, or even can be, cross-linked. In fact, Shioji et al do not disclose cross linking anything. Accordingly, Shioji et al do not disclose a cross-linked polymer of an acrylic acid compound which is water insoluble. The logical conclusion is that Shioji et al do not want a useful product which is water insoluble, whereas Applicant does want a useful product which is water insoluble.

Shioji et al do not disclose a method of adjusting the permeability of a subsurface formation, and, accordingly, do not suggest a method of adjusting the permeability of a

subsurface formation by introducing into the formation a gel which is not water soluble, wherein the gel is formed by first making a water soluble polymer and then combining the water soluble polymer with a cross linking agent.

To rely on a reference under 35 USC 103 the reference must be analogous. [MPEP 2141.01(a)] The invention disclosed and claimed in Shioji et al is not analogous to the invention disclosed and claimed herein. Shioji et al must therefore be withdrawn.

One test of whether the subject matter of a reference is or is not analogous to the subject mater of a claimed invention can be judged by the PTO classification of the proposed reference, and the classification of the invention in question. Shioji et al is in class 526 subclass 317.1 (Office Action, mailed 9/25/06). The invention claimed herein is in class 526 subclass 89+ (Requirement for Restriction, mailed 9/15/05).

In another test, the reference, to be analogous, must be either in the field of Applicant's endeavor or, if not, then it must be reasonably pertinent to the particular problem with which the inventor is concerned. In this regard, a reference is reasonably pertinent if it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. The question in this regard is whether subject matter disclosed in Shioji et al is relevant to the particular problem with which the Applicant is involved. The problem confronted by Shioji et al was to produce a poly(meth)acrylic acid (or salt) polymer having good gelation resistance and good chelating ability which problem was (presumably) solved by producing a polymer having a narrow molecular weight distribution. The problem confronted and solved by Applicant was to produce a water soluble polymer of an acrylic acid compound which can be cross linked to produce a water insoluble gel.

It is submitted that the attention of an inventor seeking to solve the problem solved by Applicant would not be drawn to the disclosure of Shioji et al, because Shioji et al do not deal

with the same problem, and do not produce a first product (the water soluble polymer of an acrylic acid compound) having a minimum concentration of an element (the divalent metal salt of the acrylic acid compound) necessary to produce and a second product (the water insoluble gel) which exhibits a feature not desired by Shioji et al.

Claims 1, 2 and 6 are not obvious and are in condition for allowance.

With regard to claims 1, 2 and 6, Shioji et al do not suggest a method of making a polymer having a quantity of acrylic acid compound and a specified minimum quantity of a divalent metal salt of the acrylic acid compound (such as magnesium acrylate), nor do Shioji et al suggest a method of making a polymer having a quantity of acrylic acid compound, a specified minimum quantity of a divalent metal salt of the acrylic acid compound (such as magnesium acrylate) and a specified quantity of a monovalent metal salt of the acrylic acid compound (such as an alkali metal acrylate) to form a polymer which is water soluble.

Claims 3, 4, 5, 7 and 8 are not obvious and are in condition for allowance.

With regard to claims 3, 4, 5, 7 and 8, Shioji et al do not suggest combining their water soluble polymer with a cross linking agent (such as a trivalent metal) to form a water insoluble gel.

Claims 12 and 13 are not obvious and are in condition for allowance

With regard to claims 12 and 13, Shioji et al do not suggest a method of making a water soluble polymer by mixing an acrylic acid compound (such as acrylic acid), with a material selected from the group consisting of a divalent metal compound (such as magnesium hydroxide), a monovalent metal compound (such as sodium hydroxide) and mixtures thereof to form a polymer precursor. Shioji et al do not suggest combining the precursor with a polymerization initiator (such as free radical initiator) to form a water soluble polymer.

Claims 14 and 15 are not obvious and are in condition for allowance.

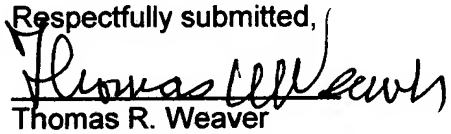
With regard to claims 14 and 15, Shioji et al do not suggest a method of adjusting the permeability of a subsurface formation by <u>any</u> means, including introducing a water insoluble gel into the formation. Shioji et al do not suggest making the gel by combining acrylic acid with a reactant selected from the group consisting of an alkaline earth metal salt of acrylic acid, an alkali metal salt of acrylic acid and mixtures thereof to form a polymer precursor, combining the precursor with a polymerization initiator (such as free radical initiator) to form a water soluble polymer and combining the polymer with a cross linking agent to form the gel.

Claim 16 is not obvious and is in condition for allowance.

With regard to claim 16, Shioji et al do not suggest a method of adjusting the permeability of a subsurface formation by <u>any</u> means including introducing a water insoluble gel into the formation. Shioji et al do not suggest making the gel by mixing acrylic acid with a material selected from the group consisting of magnesium hydroxide, sodium hydroxide and mixtures thereof to form a polymer precursor, combining the precursor with a polymerization initiator (such as free radical initiator) to form a water soluble polymer and combining the polymer with a cross linking agent to form the gel.

This application is in condition for allowance. Reconsideration and allowance are requested.

Respectfully submitted,



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CERTIFICATE OF MAILING

I hereby certify that the within and foregoing document, together with the attachments referred to therein, if any, is being deposited by the undersigned with the United States Postal Service as first class mail in an envelope, with sufficient postage, addressed to the Commissioner For Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on October 25, 2006.

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